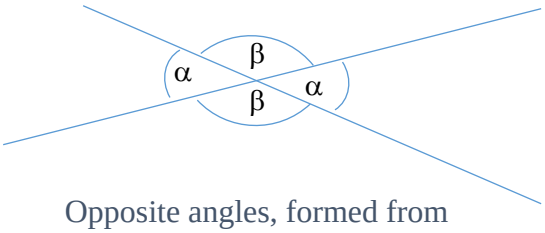
Math 5e, Homework 22

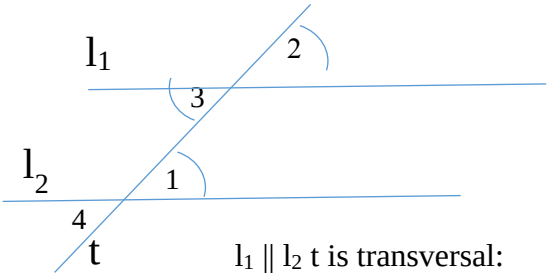
due March 19

Instructions: Some of the problems we solved in class, and some are new. Please try to solve all problems, do your best, and show your work. Write on separate sheets of paper, not between the lines of this handout!

Geometry: Angles , Parallel lines



Opposite angles, formed from crossing straight lines, are equal.



$l_1 \parallel l_2$ t is transversal:
$\angle 1 = \angle 2 = \angle 3$

$\angle \alpha = \angle \alpha$ – opposite

$\angle \alpha + \angle \beta = 180^0$ – on a straight line,

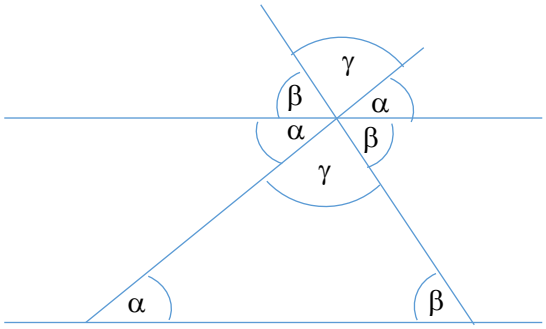
Or complementary angles

$\angle 1 = \angle 3$ = alternate internal angles

$\angle 1 = \angle 2$ = corresponding angles

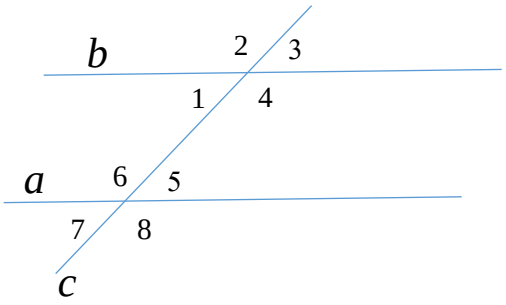
$\angle 4 = \angle 2$ = alternate exterior angles

From both these pieces of information we can show that the sum of angles in a triangle is always 180^o.



Homework

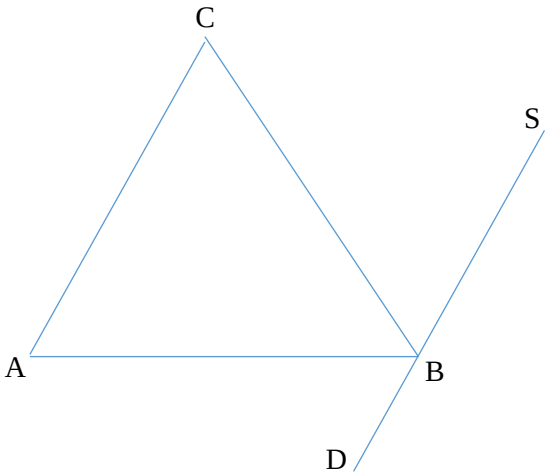
1. On the picture, *a* and *b*, which are parallel to each other, are intersected by line *c*. What are the relationships (name the type of angles):
   (a) ∠3 and ∠5
   (b) ∠2 and ∠8
   (c) Prove (explain) that ∠4 + ∠5 = 180°.



2. In the same picture,
   (a) if ∠7 = 65°, find: ∠1, ∠3, ∠1 + ∠6
   (b) If you know that ∠7 = ∠1, prove that*: ∠1 = ∠3 and ∠5 = ∠1

   (* *or say why the angles will be equal*)

3. Intersecting at point B on triangle ABC is drawn line DS, such that DS is parallel to AC. Prove that (or say why the angles will be equal):
   (a) ∠ACB = ∠SBC
   (b) ∠CAB = ∠DBA
   (c) ∠CAB = ∠SBK
   (d) If ∠CAB = 40° and ∠BCA = 60°, find angles ∠ABD and ∠SBC



4. In triangle ABC, ∠A = 35°, ∠B = 55°, prove (explain) that this triangle is right-angled.

5. What type of triangle has one angle equal to the sum of the other two?

6. Find each of the outside angles of a right-triangle, if one of its angles is 58°.